

The Effect of (MetCon) Training to Developing the Velocity Power and Defensive Follow-Up for Young Basketball Players

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Abstract

The researchers decided to go into this study by applying a training method represented by (MetCon) training for the purpose of giving a clear and accurate scientific indication for coaches to develop these abilities because their development will contribute to reaching high skill performance through upgrading the physical capabilities and skill in defensive performance required to perform during play. The research aims to prepare (MetCon) exercises to develop rapid strength and defensive follow-up for young basketball players. And learn about the impact of MetCon training in developing rapid strength and defensive follow-up for young basketball players. The researchers hypothesized that there is a positive effect of (MetCon) training in developing rapid force and defensive follow-up for young basketball players. The researcher used the experimental method in the method of (equal control and experimental groups) of pre and post-test for its suitability to the nature of the research, and the research community was determined by the young Hilla club basketball players for the year (2019-2020), whose number is (16) players. The research sample was represented by (12) players who were deliberately selected from the research community and distributed randomly into two groups, a control group and a group of MetCon training, and the most important conclusion was that the MetCon training has a positive effect in developing rapid strength and defensive follow-up for young basketball players.

Key Words: *Metabolic conditioning (MetCon) , rapid strength, defensive foot movements.*

Introduction

In order to improve the training level and develop the special capabilities of the players, the coaches used many training methods and means to develop them in terms of physical, skill and planning, in line with the specificity of the game and their individual capabilities. Each game or event has its own ¹ requirements in training and in the ¹ energy system prevailing in it, as the steps for success in all sporting events and activities require coaches and experts to follow the correct training method that achieves the goals set to reach the best achievements by following training methods that are commensurate with the characteristics and type of the game, the prevailing energy system, the level of players and their capabilities according to the movement path of skills for the purpose ² of improving the level of sport achievement. (MetCon) training is one of the modern high-intensity functional training exercises, which is the nervous

system exercises that require a relatively large muscular effort by stimulating the muscle groups and mobilizing the largest possible number of muscle fibers, this leads to her having the property of rapid muscle contraction, and she stimulated her to work with great capacity by focusing on the rapid force represented by explosive abilities and the force characterized by speed of skillful performance, therefore ³, it is called the exercises of the nervous system because it generates a great effort on it because of the nerve movements to mobilize the largest number of movement plaques, and then the adaptation and development of these capabilities occur ².

Basketball is one of the games that is characterized by the rapid rhythm of switching between attack and defense and vice versa, and as a result of this the multiplicity of different movement performances, which are characterized by speed, strength and work with explosive capabilities in line with the various situations

that the player faces while playing, especially in defense to face the different attack methods, so mastering the performance of defensive skills, especially defensive follow-up, is an important requirement to win the game through strong and fast moves that enable the ³ player to take the best defensive place and reserve the opponent, Among this is the great importance of defensive follow-up and its large space in defensive performance as well as the movement of the player for the purpose of possession of the ball and follow-up. The researcher's opinion is to go into this study by applying a modern training method represented by (MetCon) exercises to develop and improve the strength, required speeds and explosive capabilities for defensive follow-up of youth basketball players ⁴.

Research problem:

The research problem is embodied in the presence of a weakness in the abilities of defensive skills performance of young basketball players as a result of the lack of appropriate training methods in developing these abilities as raising the training level of any player cannot be promoted, whether physically, skillfully, or planned without following modern training techniques to develop and master skills defensive, especially defensive follow-up, because it is the cornerstone of the beginning of the attack using physical, skillful, complex defense exercises, characterized by high intensity, combining strength and speed, by using methods that simulate the movement path of defensive follow-up according to competitive playing conditions, and through the researcher's interest and follow-up to the training units, being a former player and his contact with coaches of the Iraqi Basketball Premier League for Youth, it was found that they are not given enough time to focus on training that needs a high level of speed and strength, maximum capabilities are complex and integrated to suit the movement path of defense follow-up, which led to a clear weakness in the possession of the rebound balls, and if any, it does not meet its purpose due to the failure to follow the appropriate methods that employ the physical side by using (MetCon) training in the skill side during training and the lack of awareness of the players about it and their lack of adaptation to perform such exercises

and with high intensity with skill proficiency Follow-up defensive young basketball players.

Research objectives:

- Preparing (MetCon) training to develop quick strength and batch follow-up for young basketball players.
- Identify to the impact of (MetCon) training in developing rapid strength and defensive follow-up for young basketball players.

Research hypothesis: The (MetCon) training has a positive effect in developing the quick power and defensive follow-up of young basketball players.

Research fields:

The human field: Young Hilla basketball players for the sports season (2019-2020).

Time field: From (11/12/2019 to 1/7/2020).

Spatial field: Martyr Hamza Nouri Hall for Sports Games in Babel Governorate Center

Research methodology and field procedures:

Research Methodology:

The researchers used the experimental approach because of its suitability to the nature of the research.

Community and sample research:

The research community was identified with the young basketball players of Al Hillah Sports Club for the 2019-2020 season, and their number is 16 players aged between (17-19), and the sample was chosen by an intentional method, then they were divided into two equal groups randomly, each group of 6 players, who represent 75% of the research community, and (MetCon) training was given to the experimental group.

Homogeneity and equivalence of the sample:

The homogeneity and parity between the two groups (control and experimental) were performed in the dependent variables using the Levine test and (T)test for the independent samples of equivalence, in which the

significance level value appeared greater than (0.05), which confirms the homogeneity and parity of the two groups, as shown in table (1).

Table (1) the F-test shows the levene test and the T. test for independent samples

N	Variables	Measuring unit	F value levene	Sig levene test	Value (T) Calculated	Sig level	Sig type
1	Explosive power	Watts	0.41	0.54	0.22	0.84	Non sig
2	Velocity power	Meter	0.65	0.85	1.54	0.32	Non sig
3	Defensive follow-up	Second	3.04	0.31	1.60	0.160	Non sig

At a degree of freedom (10), and a level of significance (0.05)

Devices, tools and means used in the research:

Means of data collection:

- Observation.
- Tests and benchmarks.
- Personal interviews
- Questionnaire.

Tools and devices used:

- Sony Chinese imaging cameras.
- Computer (HP) of Chinese origin.
- A Chinese digital (Canon) camera of 25 images / second.
- (8) basketballs, type (Molten), made in China.
- Two (2) electronic Chinese-made electronic stopwatch.
- 25m metal tape measure.

- 12 plastic signs of different heights.
- Fox whistle, count (3).
- Agility ladder, length of 8 m.
- Barriers, 30 cm high, count (4).

Field research procedures:

Determine the tests for the skills studied: For the purpose of determining special capabilities, the researcher sought to seek the use of scientific sources and research that dealt with the above topic and was presented to a group of experts and academics in the field of basketball with scientific and field experience and the elements of quick force and follow-up were identified.

- Explosive power.
- Velocity power.
- Defensive follow-up.

Tests and measurements used in the research:

Velocity power Tests:

First: The vertical jump test of stability. ⁽¹⁾

The purpose of the test: Measurement of the explosive power of the muscles of the legs and the stump.

Second: the three-partial test (right and left).⁽²⁾

The purpose of the test: Measurement of force characterized by velocity for all parts of the body.

Third: the defensive follow-up test:⁽³⁾

The purpose of the test: Measure the speed of defensive follow-up performance.

Exploratory experience:

The exploratory experiment was conducted before the start of the basic experiment on Friday 2/10/2020 in order to find out the most important obstacles and negatives in order to be addressed, and among the objectives of the exploratory experiment are the following:

- Identify the difficulties that the researcher may face while applying the tests in the main study
- Knowing the maximum intensity for each exercise and rationing on the basis of that.
- Training of assistants on how to take the tests.
- The extent to which the individuals of the research samples understand the proposed exercises
- Ensure that tests are easy to apply while saving time and effort.

Pre-test:

The pre-tests were conducted on Monday 12/10/2020 at four o'clock in the afternoon. They included rapid force tests represented by their effect on the nervous system, which are the explosive ability test and the characteristic velocity force, then a defensive follow-up test.

Main experience:

MetCon training has been prepared, and these exercises include the skills and physical aspects in a manner consistent with the capabilities and capabilities of young basketball players on 18/10/2020, and it was

distributed in the training units in a coordinated and appropriate manner, taking into account the components of the training load (intensity, repetitions, appropriate rest periods), to be able to develop the physical and skill capabilities of the experimental research group to achieve the objectives and goals of the training process and research.

Details of the component exercises used for the experimental group:

- The total number of training units will include exercises (24) doses.
- The number of training units per week is (3) doses for a period of (8) weeks.
- The time for one training dose is (25-30) minutes.
- Training days during the week will be (Sunday, Tuesday, Thursday) for the experimental group (MetCon Training).
- The goal of MetCon training is to develop explosive ability and strength, advantage with speed and follow-up defense for young basketball players.
- Taking into account the training and orientation pregnancy during the one week and between the eight weeks through rationing of intensity, size and intensity.

Post-test:

The post tests were conducted on Sunday 13/12/2020, taking into account the same circumstances, conditions and instructions that were used in the pre-tests.

Statistical methods used:

- Mean.
- Std. Deviation.
- Leven test for homogeneity.
- (T) test for cross-linked samples.
- (T) test for independent samples.

Presentation, analysis and discussion of results: and control groups in the pre and post-tests in the rapid force and defense follow-up is under discussion.
Presentation of the results of the experimental

Table (2) it shows the arithmetic mean and the standard deviation in the results of the pre and post-tests of the experimental and control groups in the quick force and the defensive follow-up.

Variables	Testing	Measuring unit	Pre-test				Post-test			
			Control		Experimental		Control		Experimental	
			Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Velocity power	Explosive power	Watts	11.21	1.14	11.94	0.90	12.98	0.80	14.93	0.84
	Velocity power	Meter	4.33	0.393	4.810	0.439	5.20	0.60	6.81	0.62
Skillfully	Defensive follow-up	Number	16.40	1.42	17.06	1.12	14.34	0.94	12.25	1.14

Presenting the differences of the arithmetic mean and the standard deviation between the pre and post-tests of rapid strength and the defensive follow-up of the experimental group (MetCon training), analyzing and discussing them.

Table (3) it shows the difference of the arithmetic mean, its standard deviation, (t) value, the level of significance, and its significance the differences between the results of the pre and post- tests in the explosive ability and force characterized by speed and defensive follow-up of the experimental group (MetCon training).

Testing	Measuring unit	Difference of means	Standard deviations difference	T value Calculated	Sig level	Sig type
Explosive power	Watts	284.9	83.72	8.33	0.000	Sig
Velocity power	Meter	2	0.63	7.79	0.001	Sig
Defensive follow-up	Second	4.81	1.89	6.21	0.002	Sig

Degree of freedom (5), level of significance (0.05)

Discuss the results of Velocity power and defensive follow-up for the experimental group (MetCon training).

Through the presentation and analysis of the results, it was noted that there are significant differences between the pre and post measurements and in favor of the post-test in the explosive power test, the researcher attributes the reason to the use of the MetCon training method, in which exercises characterized by high intensity and explosive movements related to rapid rebound jumps using all parts of the body as Step up (Burpee. Squatting) exercises. All of these exercises depend on combining force with speed with harmonic movements under the influence of the central nervous system And with a high intensity to develop explosive power.

Through the presentation and analysis of the results, it was observed that there are significant differences between the pre and post measurements and in favor of the post- test in the characteristic strength test with the speed. The crisis adaptations of the central nervous system by mobilizing the largest number of motor units during muscle contractions repeatedly and in the shortest possible time.

Table (3) showed that there are significant differences between the pre and post- test in the defensive follow-up test for the experimental group (MetCon training) and in favor of the post test, as this group showed a significant development in the test of defensive follow-up skill as a result of the impact of the MetCon exercises that the researcher inspired from actual competition situations similar to conditions different play and focus on developing fast force special abilities associated with this skill, Represented by the explosive ability and the distinctive force of speed, such as jumping, jumping, partridge and pushing up with the two legs in the manner of special compound harmonic exercises with follow-up with one hand, both hands were entrusted to the basket through successive jumping exercises over the huts and terraces as “choosing the appropriate exercises enables the coach to develop physical qualities and at the same time to perfect the player’s skills” (4), as well as developing follow-up in conditions similar to competition by making a box-out movement, so the defender tries to occupy the right place according to his expectation of bouncing the ball.

Presenting, analyzing and discussing the differences of the arithmetic mean and the standard deviation between the pre and post-tests of the control group.

Table (4) it shows the difference of the arithmetic mean, its standard deviation, (t) value, the level of significance, and its significance the differences between the results of the pre and post-tests in the explosive power and force characteristic of the velocity of the control group.

Testing	Measuring unit	Difference of means	Standard deviations difference	T value Calculated	Sig level	Sig type
Explosive power	Watts	1.77	1.38	3.13	0.026	Sig
Velocity power	Meter	0.78	0.61	3.45	0.018	Sig
Defensive follow-up	Second	2.06	1.09	4.61	0.45	Sig

Degree of freedom (5), level of significance (0.05)

Discussing the results of the explosive ability and the force distinguished by the speed and defensive follow-up of the control group between the pre and post- tests.

Through the presentation and analysis of the results, it was noticed that there are few significant differences for the control group in the explosive ability test between the two measurements before and after, and in favor of the post test. The researcher attributes the reason for the significant differences to the effect of the regular approach set by the trainer in addition to the continuation and regularity of the players in training, which had a clear role, on the development of motor abilities. (Saad Mohsen) asserts, "Whatever the scientific and practical methods of their culture differ, the training program inevitably leads to the development of achievement, if it is built on a scientific basis in the training process, programming and using the appropriate intensity and progression and noting individual differences as well as the use of optimal repetitions and effective interval periods under the supervision of specialized trainers under good training conditions in terms of place, time and tools used"⁽⁵⁾, in which exercises were used that were performed repeatedly and in a simplified and sequential manner, according to scientific and well-studied training standards.

Through the presentation and analysis of the results, it was noticed that there are few significant differences for the control group in the strength test characteristic of speed between the two measurements before and after and in favor of the post test. The researchers attribute the reason for the significant differences to the effect of the regular approach developed by the trainer as it had an effect on the members of the control group sample. Continuity in training, feedback and commitment throughout the week helped in the development and implementation of the trainer's program prepared in an accurate manner, according to his style. In addition to his choice of exercises that play a role in development, Bastwissi Ahmed and Abbas al-Samarrai (1994) mentions: "Exercises are organized and targeted movements through which they obtain the development

of motor and skill qualities in the field of life and sports"⁽⁶⁾.

Table (4) showed that there were not significant differences between the pre and post-test in the defensive follow-up test of the control group, as it showed that the control group did not increase its performance level in the defensive follow-up tests. The researcher attributes the reason for the lack of development of the defensive follow-up of the control group in the post-tests to the lack of the curriculum followed by the trainer to special exercises related to developing the defensive follow-up. While the experimental group showed significant results between the pre and post measurements in the defensive follow-up test due to the training of (MetCon) which the researchers believe has had an effective impact on the development of the experimental group players. The researchers also attribute the lack of development to the lack of the methodology used by the trainer to rapid force training to develop explosive ability and force characterized by speed and its limitation to general and unregulated skill training and lack of difficulty and focus on the control and control capabilities of movement relationship to defensive follow-up, and it is not directed to achieve a specific goal or to develop defensive follow-up, unlike the experimental group on which (MetCon) exercises were applied to develop quick strength and skill at the same time, as it included exercises for physical abilities in addition to skill exercises, and these had an active role in the accuracy and speed of performance of the mentioned skills, which led to their development In the experimental group, it did not develop in the control group.

Presentation of the results of the differences between the control and experimental groups in the dimensional tests of rapid forces and defense follow-up, analyzing and discussing them.

Table (5) it shows the differences of the arithmetic mean for the tests of explosive power, rapid force, and post-defense follow-up of the two research groups (experimental - control).

Testing	Measuring unit	first Experimental group (S.A.Q training)		Second experimental group (MetCon training)		Difference means	T value Calculated	Sig level	Sig type
		Mean	Std. Deviation	Mean	Std. Deviation				
Explosive power	Watts	12.98	0.80	14.93	0.84	1.94	4.08	0.002	Sig
Velocity power	Meter	5.20	0.60	6.81	0.62	1.61	4.54	0.001	Sig
Defensive follow-up	Second	14.34	0.94	12.25	3.43	2.09	3.43	0.006	Sig

Degree of freedom (10), level of significance (0.05).

Discussing the results of the explosive ability and force tests characterized by velocity and defensive follow-up of the two research groups in the post- tests.

Through what has been presented in tables (5), the researchers attribute the significance of the differences in the explosive ability test between the two groups (experimental and control) to the effect of special MetCon exercises prepared by the researcher, as these exercises contributed to the development of explosive ability among young basketball players, It was performed in an orderly and orderly manner, with effective repetitions and adequate rest periods, and was characterized by diversification and focus on the explosive ability to be developed, and this was confirmed by Qasim Hassan that “special exercises contain an element or several elements of effectiveness similar to the movement or close to it towards the movement or the force of movement” (6), also, the skillful physical compound MetCon training contributed to the development of this

important ability by using the jumping, jumping and partridge exercises over the huts and stables and then following up on the basket. As for the control group, there was a development in the explosive ability, but in a small percentage because the trainer’s exercises were not a wave to develop the abilities of the defensive follow-up, such as the exercises of the MetCon, which the researchers focused in it, rebound exercises by jumping, jumping and partridge, with follow-up on the basket to receive the ball.

Through what has been presented in tables (5), we note the presence of significant differences between the tests of the two groups (control and experimental) in the strength test of the advantage with speed and in favor of the experimental group due to the MetCon training prepared by the researchers, as these exercises contributed to the development of this group in the post-test measurements that distinguish it with repetitions the persistent severely under-maximum, represented by

the bug jumping exercises over specific marks on the ground, the repeated rebound jumps over the barriers and the stairs and the boxes with both feet or one foot, and the skill exercises of the defensive foot movements represented by the defensive move and defensive follow-up. All these exercises had a positive effect on the development of the MetCon group in the strength test characterized by speed.

Through what has been presented in the tables (5), we note that there are significant differences between the results of the two groups in the post- tests for defensive follow-up and in favor of the MetCon training group, the researchers attribute the reason for these differences to the fact that the training of MetCon had a positive and important effect in developing the skill of defensive follow-up because it is similar exercises to playing conditions through the presence of the attacker, the researcher noticed during the training units that when the players' implementation of the exercises is linked to the presence of the attacker, their implementation of those exercises and duties is characterized by great seriousness and focus, which contributed to the increase in the rapid transmission of nerve signals to the working muscles as well as the internal compatibility as the planned, organized and continuous training has an effect. Effective in developing compatibility and upgrading work among highly common motor units ⁽⁷⁾, this is consistent with what Hara mentioned that "the benefit of special exercises lies in being directed, that is, they can distribute the kinetic effects of them more than other exercises." ⁽⁸⁾, also the researcher agrees with what Muhammad Abdul Rahim Ismail indicated. As much as possible, creating a lot of playing situations similar to the conditions of competition leads to the creation of a team accustomed to matches "⁽⁹⁾, the MetCon training aims to develop the explosive abilities of harmony between the speed of the ball bouncing from the basketball board and the jumping of the players, as this was a positive effect on the accuracy of the performance of this skill, because the player's success in receiving the rebound ball from the basket depends on his ability and ability to match during the jump and receiving the ball, we conclude from this that the development of the compatibility of following the defensive rebound balls has a great impact on the

development of this skill, as the basketball player must have explosive ability and a high compatibility between the eyes, arms and legs when performing this skill, and this is confirmed by Louay Ghanem. The hand and the leg are the most important factors for the performance of the athlete, and there is a transmission of nerve signals between the nervous and muscular systems. Therefore, all movements that he performs require a degree of compatibility between the nervous system and the muscular system necessary for the performance of skills "⁽¹⁰⁾, as well as the development of defensive follow-up skill for a group of MetCon exercises is due to the specificity and quality of these exercises because they are comprehensive exercises for all parts of the body, such as Burpee exercise. Squattin and thus, MetCon exercises the main role in developing this important skill that has a major role in deciding the outcome of the game with basketball. The use of optimal repetitions and intermediate periods of interval influencing as well as training to take the appropriate place using the maneuver with the feet based on the expectation of rebounding the ball from the correction board had a positive effect in developing the defensive follow-up of the group of MetCon exercises.

Conclusions and Recommendations

Conclusions:

In light of the results that the researchers have reached through the field experiment, he concluded the following:

- The experimental group achieved good results in arithmetic mean differences between the two pre-post measurements and in favor of the post-test in the rapid strength tests and defensive follow-up.
- The control group did not achieve good results in the arithmetic mean differences between the two pre-post measures in the rapid strength tests and the defensive follow-up).
- The experimental group achieved good results in arithmetic mean differences in the two dimensional measurements in tests of explosive power and strength characterized by velocity and defensive follow-up.

- MetCon training is an advantage in developing rapid strength and defensive tracking of the experimental group.

Recommendations:

- The necessity of using modern training methods such as MetCon training and in various sports by coaches in order to save effort and time and achieve training goals.

- Adopting MetCon training and codifying it according to energy systems in order to save effort and time and achieve training goals in line with the capabilities, capabilities and preparation periods of the trainees.

- Adopting complex and functional exercises according to the dynamic course of the skill for the purpose of developing defensive follow-up for young basketball players.

- Conducting other studies and research using other modern training methods on different age groups with different skills and for both sexes in different games.

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved and all experiments were carried out in accordance with approved guidelines.

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